

CONTENTS

Preface	v
FABRICATION	
Process of fine milling for ceramic materials	3
H. W. Hennicke and J. Stein (Clausthal-Zellerfeld, F.R.G.)	
Non-uniformities and pore formation	9
U. B. Agbarakwe, J. S. Banda and P. F. Messer (Sheffield, U.K.)	
Systematic development of the ceramic injection moulding process	17
M. J. Edirisinghe and J. R. G. Evans (Uxbridge, U.K.)	
Processing of silicon nitride ceramics	27
P. Greil (Hamburg, F.R.G.)	
Microstructural changes in alumina during hot isostatic pressing	37
J. Besson and M. Abouaf (Evry, France)	
Upgrading technical ceramics	45
L. R. Wolff (Eindhoven, The Netherlands)	
Microstructure of zirconia-toughened alumina obtained through different precursor routes	53
C. Brodhag, J. P. Bach, F. Thévenot (St. Etienne, France) and M. Deleterre (Mons, Belgium)	
Behaviour of titanium in mullite-zirconia composites.	61
M. F. Melo and M. O. Figueiredo (Lisbon, Portugal)	
Organo-metallic chemical vapour deposition of silicon-rich amorphous $\text{Si}_x\text{C}_{1-x}$ refractory layers using SiEt_4 as a single source	69
F. Maury, A. Mestari and R. Morancho (Toulouse, France)	
Copper-cordierite cosintering	77
V. Oliver-Broudic, J. Guille, J. C. Bernier, B. S. Han, J. Werckmann, J. Faerber, P. Humbert and B. Carriere (Strasbourg, France)	
Ion beam mixing of Al_2O_3 -Cu interfaces for enhanced adhesion	83
G. Fuchs, E. Abonneau, M. Treilleux and A. Perez (Villeurbanne, France)	
Carbon behavior in sintered silicon nitride grain boundaries.	89
K. Watari, M. Kawamoto and K. Ishizaki (Niigata, Japan)	
Acid-basic stability of Y-TZP ceramics.	97
J. C. Fariñas, R. Moreno, J. Requena and J. S. Moya (Madrid, Spain)	
Effect of Y_2O_3 and MgO contaminants introduced by Y-TZP and Mg-PSZ milling balls on the sintering of Al_2O_3 powders	101
M. F. Barba, M. R. Martinez and M. A. Rodriguez (Madrid, Spain)	
Reaction-sintered ZrO_2 -mullite composites	105
M. Holmström, T. Chartier and P. Boch (Limoges, France)	
CHARACTERIZATION	
Conception of electronic ceramics in relation to their functional reliability: applications to multilayer ceramic capacitors and semiconductor ceramics	113
A. Lagrange (St. Apollinaire, France)	
Features of the caeria-zirconia system	121
S. Meriani (Trieste, Italy)	
Mechanical properties of engineering ceramics: test bars <i>versus</i> components	131
R. Morrell (Teddington, U.K.)	

CONTENTS (continued)

Influence of additives on the microstructural development of mullite-ZrO ₂ and alumina-ZrO ₂	139
J. S. Moya, P. Miranzo and M. I. Osendi (Madrid, Spain)	
Biaxial stress rupture of silicon nitride	147
G. Quinn and G. Wirth (Köln, F.R.G.)	
The influence of porosity on the thermal diffusivity of gamma-aluminate ceramics	153
M. Bertolotti, L. Fabbri, C. Sibilia, A. Ferrari (Rome, Italy), F. Genel-Ricciardello (Palermo, Italy), C. Alvani (Casaccia, Italy) and G. Suber (Rome, Italy)	
Characterization of the microstructure of sintered AlN by transmission electron microscopy	157
M. F. Denanot and J. Rabier (Poitiers, France)	
As-grown metal oxides and electron-irradiated Al ₂ O ₃ studied by positron lifetime measurements	161
H.-E. Schaefer and M. Forster (Stuttgart, F.R.G.)	
 APPLICATION AND PROPERTIES OF CERAMICS FOR ELECTRONICS	
Degradation of dielectric ceramics	171
R. Waser (Aachen, F.R.G.), T. Baiatu and K. H. Härdtl (Karlsruhe, F.R.G.)	
Electrical properties of bismuth-doped non-stoichiometric strontium titanate ceramics	183
A. M. S. Correia and J. L. Baptista (Aveiro, Portugal)	
Titanium-implanted optical waveguides in LiNbO ₃	189
Ch. Buchal (Jülich, F.R.G.), P. R. Ashley (Arsenal, AL, U.S.A.) and D. K. Thomas (Oak Ridge, TN, U.S.A.)	
Effect of solid solution between barium titanate and cobalt-based perovskites on dielectric properties	193
F. Weill, J. L. Rehspringer and J. C. Bernier (Strasbourg, France)	
The influence of cobalt on the electrical characteristics of ZnO ceramics	201
A. Miralles, A. Cornet, A. Herms and J. R. Morante (Barcelona, Spain)	
Ceramic-fiber-polymer composites for electronic substrates	207
J. D. Bolt, D. P. Button and B. A. Yost (Wilmington, DE, U.S.A.)	
 POWDERS AND RAW MATERIALS	
Microstructure characteristics of ultra-fine ZrO ₂ -Y ₂ O ₃ ceramic powders	215
A. J. A. Winnubst, W. F. M. Groot Zevert, G. S. A. M. Theunissen and A. J. Burggraaf (Enschede, The Netherlands)	
Influence of sol-gel processing on the morphology and crystallization of Mg ₂ TiO ₄ powders	221
S. El Hadigui, S. Vilminot and J. C. Bernier (Strasbourg, France)	
Particular-shaped powders obtained by modification of aluminium and zirconium alkoxides	227
S. Dick, C. Suhr, J. L. Rehspringer and M. Daire (Strasbourg, France)	
Chemical processing for electronic ceramics: a challenge	233
J. C. Bernier (Strasbourg, France)	
Fumed oxides as base materials for ceramic applications	243
W. Hartmann, A. T. Liu, D. Peuckert and P. Kleinschmit (Hanau, F.R.G.)	
Aluminium nitride by carbothermal nitridation	247
R. Bachelard and P. Joubert (Pierre-Bénite, France)	
Studies on synthesis and sintering of cordierite	253
J. C. Broudic, S. Vilminot and J. C. Bernier (Strasbourg, France)	
Related chemical themes in the synthesis of advanced ceramic materials	261
D. Segal (Didcot, U.K.)	

CONTENTS (continued)

Preparation of silicon oxynitride and nitride by nitridation of amorphous silica in ammonia	265
P. Petrovski, H. Smailhodžić and S. Marić (Tuzla, Yugoslavia)	
Characterization of agglomerates by ceramic powder compaction	271
J. M. Heintz, F. Weill and J. C. Bernier (Strasbourg, France)	
SUPERCONDUCTORS	
New trends in the crystal chemistry of high- T_c superconductors	281
B. Raveau, M. Hervieu, C. Michel and J. Provost (Caen, France)	
Solution routes to synthesize superconducting oxides	289
H. Medelius and D. J. Rowcliffe (Stockholm, Sweden)	
The chemistry and properties of grain boundaries in chemically thinned $\text{Y}_1\text{Ba}_2\text{Cu}_3\text{O}_{7-x}$	293
L. T. Romano, P. R. Wilshaw, N. J. Long and C. R. M. Grovenor (Oxford, U.K.)	
Effect of cation non-stoichiometry and of process parameters on properties of YBCO	299
H. J. Scheel (Geneva, Switzerland), F. Licci, T. Besagni, F. Bolzoni, S. Catanni (Parma, Italy), D. Eckert (Geneva, Switzerland) and G. Salviati (Parma, Italy)	
New oxygen-deficient perovskite phase in the $\text{La}_{1-x}\text{Sr}_x\text{CuO}_{3-y}$ system	307
N. Murayama and Y. Torii (Nagoya, Japan)	
Ion implantation and thermal annealing of high- T_c single crystals of $\text{YBa}_2\text{Cu}_3\text{O}_x$	311
C. W. White, J. C. McCallum and L. A. Boatner (Oak Ridge, TN, U.S.A.)	
Superconducting weak link in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ ceramic films	317
M. Akinaga, D. Abukay and L. Rinderer (Lausanne, Switzerland)	
$\text{YBa}_2\text{Cu}_3\text{O}_x$ thin films coated by plasma polymerization	321
S. Morohashi, H. Tamura, A. Yoshida and S. Hasuo (Atsugi, Japan)	
Influence of Y_2O_3 - ZrO_2 buffer layers on sputtered films of $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$	325
D. W. Greve, A. K. Stamper, T. E. Schlesinger and M. Migliuolo (Pittsburgh, PA, U.S.A.)	
The rate of oxygen gain in $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ exposed to air	329
E. Saiz and J. S. Moya (Madrid, Spain)	
ENGINEERING CERAMICS	
Characterization of Bi-Sr-Ca-Cu-O superconducting materials by Raman spectroscopy	337
P. V. Huong, E. Oh-Kim (Talence, France), K. H. Kim, D. Kim and J. S. Choi (Seoul, South Korea)	
Effect of composition, phase content and microstructure on the performance of yttrium Si-Al-O-N ceramics	341
T. Ekström (Stockholm, Sweden)	
Electrical discharge machinable ceramic composites	351
C. Martin, B. Cales, P. Vivier and P. Mathieu (Trappes, France)	
Hot-pressed Si_3N_4 -SiC whisker composites	357
A. Bellosi and G. De Portu (Faenza, Italy)	
Borosilicate glass reinforced with continuous silicon carbide fibres: a new engineering ceramic.	363
A. Briggs and R. W. Davidge (Didcot, U.K.)	
Slip-cast hot isostatically pressed silicon nitride gas turbine components	373
R. Dillinger, J. Heinrich and J. Huber (Selb, F.R.G.)	
Interaction of ceramic cutting tools with nickel-based alloys.	379
H. Addhoum and D. Broussaud (Evry, France)	
Oxidation processes in silicon-nitride-based ceramics	389
M. Pomeroy and S. Hampshire (Limerick, Ireland)	

CONTENTS (*continued*)

Pressureless sintering of silicon nitride with additives of the $\text{Y}_2\text{O}_3\text{-Al}_2\text{O}_3\text{-SiO}_2$ system	395
J. C. Almeida, A. T. Fonseca, R. N. Correia and J. L. Baptista (Aveiro, Portugal)	
Studies on the strengthening of silicon carbide-based multiphase ceramics	
I: The SiC-TiC system.	401
D. L. Jiang, J. H. Wang, Y. L. Li and T. Ma (Shanghai, China)	
The influence of lubrication on ceramic and steel sliding contacts	407
P. Andersson and O. Ylöstalo (Espoo, Finland)	
INNOVATION IN TRADITIONAL CERAMICS	
Technological and productive innovations in the ceramic industry with particular reference to ceramic floor and wall tiles	417
G. Nassetti (Bologna, Italy)	
AUTHOR INDEX	427
SUBJECT INDEX	429



